



DEPARTMENT OF CLINICAL NEUROSCIENCE

K8F6026, Positron Emission Tomography Imaging of the CNS, 2.5 credits (hec)

Positronemissionstomografisk avbildning av det centrala nervsystemet, 2,5
högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by the The Committee for Doctoral Education on 2024-09-02, and is valid from spring semester 2025.

Responsible department

Department of Clinical Neuroscience, Faculty of Medicine

Prerequisite courses, or equivalent

No prerequisite courses, or equivalent, demanded for this course.

Purpose & Intended learning outcomes

Purpose

The course is aimed at understanding the principles of PET, the methodology used for neuroreceptor imaging and quantification, as well as to get insight in important research ongoing in the field and in the clinical applications of PET.

Intended learning outcomes

On completion of the course the students will be able to explain the basic outcome measures obtained from PET studies, to describe the methodology used for neuroreceptor quantification and to generate ideas on how PET can be applied to a clinical research question or hypothesis.

Course content

This course will cover the basic principles of positron emission tomography, development of radioligands and CNS drugs, and quantification of neurotransmitter systems and designing PET

research studies. At an applied level, the course will focus on selected imaging biomarkers to study the pathophysiology and treatment of major CNS disorders such as psychosis, depression, neurodegenerative disorders such as Alzheimer's and Parkinson's disease and also brain cancer. Specific attention will be given to new approaches for diagnostic purposes.

Forms of teaching and learning

The course will include lectures and seminars and/or group discussions with the students. Practical sessions on the analysis of PET data will be also organized. Visits of the radiochemistry lab, the autoradiography lab and the clinical and preclinical PET facilities will be organised.

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

The participation in the lectures, practical sessions, group discussions, exam and the oral presentation is compulsory. Special reasons of absence can be discussed with the course organizers. The compensation for the absence from any part will be done in the form of a written assignment.

Forms of assessment

Assessment with written exam in addition to assessment of the contribution of the student to seminars, practical session, group discussions, written essay and oral presentation. The written exam is by multiple choice questions in Canvas and the essay consists of a written text describing the application of PET in a CNS-research area with a short oral presentation in the group at a set date. The topic will be chosen by the student. Review of the literature is allowed.

Course literature

The course literature includes book chapters on principles of positron emission tomography and PET quantification and journal articles or reviews. The students will receive the material to prepare for the various activities and the examination in advance.